



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,396	12/10/2001	Daniel Kopf	111399	8273
25944	7590	03/14/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NGUYEN, DUNG T	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/006,396

Applicant(s)

KOPF ET AL

Examiner

Dung (Michael) T Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.  
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-8, 14-32 and 40-57 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 6-8, 14-32 and 40-57 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 6-8, 14-32, and 40-42 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

Claim 14 is objected to because of the following informalities: claim 14 (dependent on claim 40) recites the second lens and the second cylindrical lens but in claim 40 there are no the first lens and the first cylindrical lens. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 40-42, 6-7, and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Pillai (US6212216).

With respect to claims 40 and 15, Pillai discloses in Fig.18 and 9-10 a laser means for producing an essentially round or elliptical beam spot, comprising: a diode pumping array 148 with a plurality of emitters, wherein at least two of the emitters, each emitting a partial beam, are mounted in a horizontal array; and optical means for producing a pump beam by imaging each single emitter into a same spot (col.7, l.10), wherein said optical means further includes - an upstream optical means 77 to collimate said partial beam in a vertical plane (fast axis), and - a downstream optical means 77 to collimate said partial beam in a horizontal plane(slow axis), focus said partial beam in the vertical plane, and direct it to said spot, whereby the images of said emitters in said spot form a smooth spot by an overlap of said images (see col.7, l.6-24) in a sense that if some of said emitters die or degrade, said spot will not substantially change its intensity pattern (it is understood that with the coupling optics 79 the focus spot will not degrade even with some of the emitters dead or degraded).

With respect to claim 14, Pillai discloses optical means comprises: - a second lens 77 for collimating said partial beam in the vertical (fast axis or first plane) and in the horizontal plane (slow axis or second plane) and directing it to

said spot, which second lens is positioned at a distance away from the diode pumping array corresponding to the focal length of the second lens (it is inherent that the lens has to have a focal length); - a second cylindrical lens 77 positioned at a distance away from the diode pumping array corresponding to the sum of the focal length of the second cylindrical lens and of twice the focal length of the second lens; and - a focusing lens 79 for collimating said partial beam in a first plane and for focusing the pump light beam in a second plane perpendicular to the first plane (col.7, l.6-24).

With respect to claims 6-7 and 41-42, Pillai discloses in Fig.18 and 9-10 a laser means for producing an essentially round or elliptical beam spot, comprising: a pumping array 148 with a plurality of emitters wherein at least two of the emitters, each emitting a partial beam, are mounted on a horizontal array; and optical means for producing a pump beam by directing each partial beam to a same spot as a partial beam that is collimated in at least one plane, wherein the optical means further includes - a first cylindrical lens 77 for collimating the strongly divergent pump light of said partial beam, wherein said first cylindrical lens is positioned nearby said emitters at a distance corresponding to the focal length of the first cylindrical lens (it is inherent that the lens has to have a focal length); and

Art Unit: 2828

- a first lens 77 for collimating said partial beam in a horizontal plane and focusing said partial beam in a vertical plane and directing it to said spot, wherein said first lens is positioned at a distance away from the diode pumping array 148 corresponding to the focal length of the first lens (col.7, l.6-24).

With respect to claim 16, Pillai discloses the aspect ratio for the pump beam of greater 15:1 (col.1, l.61).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pillai (US6212216) in view of Milam et al. (US3866141). Pillai disclose in Fig.18 the diode array 148 mount and all limitations of the claim except for the wedged window. Milam teach the wedged window (col.4, l.58). For the benefit of adjusting the light beam, it would have been obvious to one having ordinary skill in the art at

Art Unit: 2828

the time the invention was made to provide Pillai the wedged window as taught by Milam.

Claims 17-28, 43-48, and 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pillai (US6212216) in view of Weingarten et al. (US6393035).

With respect to claims 17, 19-20, 23, 43-44, Pillai disclose all limitations of the claims except for the solid state laser medium which is excited by the laser means. Weingarten teach the laser medium 2 (Fig.1). For the benefit of a diode pumped laser system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to Pillai the laser medium excited by the laser pumping as taught by Weingarten.

With respect to claims 18, 21, and 45-46, Pillai discloses the aspect ratio greater than 15:1 (col.1, l.61).

With respect to claims 22 and 47, Weingarten disclose cavity-forming means 31-32 (Fig.1), whereby a reflective cavity element closest to an entrance face of the laser medium 2 is not in direct contact with said entrance face.

With respect to claim 24, Weingarten disclose the medium is Nd:Vanadate (col.10, l.67).

With respect to claims 25 and 55-56, Weingarten disclose the semiconductor saturable absorber (modelocked device) (claim 5).

With respect to claims 26-27, Weingarten disclose the mode locking operation (abstract, l.8-9).

With respect to claim 28, Weingarten disclose the regenerative amplifier (col.3, l.27).

With respect to claim 48, Weingarten disclose the laser medium 102 is bonded to a heatsink 123 (Fig.13).

Claims 49 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pillai (US6212216) in view of Weingarten et al. (US6393035) and further in view of Beach et al. (US6347109).

With respect to claim 49, Pillai and Weingarten disclose all limitations of the claim except for the pump beam being incident on a top side of the laser medium. Beach teaches the pump beam 10 being incident on a top side of the laser medium 16 (Fig.2). For the benefit of a pump laser system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Pillai and Weingarten the pump beam being incident on a top side of the laser medium as taught by Beach.

With respect to claim 50, Beach discloses in Fig.2 the thin disk laser 16.

With respect to claim 51, Beach discloses the pump beam has a double configuration 10 and 19 (Fig.2).

With respect to claim 52, Beach discloses a reflective coating 20 (Fig.2).

Claims 53-54 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pillai (US6212216) in view of Weingarten et al. (US6393035) and further in view of the admitted prior art.

With respect to claims 53-54, Pillai and Weingarten disclose all limitations of the claim except for the glue to bond the heatsink. Prior art teaches the glue (p.10, l.14-15). For the benefit of a good bonding, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Pillai and Weingarten the glue as taught by Prior art.

With respect to claim 57, Prior art discloses a frequency conversion device (LBO) (p.12, l.16-17).

Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pillai (US6212216) in view of Beach et al. (US6347109).

With respect to claims 29 and 32, Pillai disclose all limitations of the claims except for the laser medium which is partly supported in at least two first regions contacting thermally conducting material (heatsink), and with at least two second regions adjacent to said first regions, the surface of said second regions contacting material with low thermally conductivity. Beach teach in Fig.5A the laser medium 16 which is partly supported in at least two first regions (surfaces) contacting thermally conducting material 18 (heatsink), and with at least two second regions (surfaces) adjacent to said first regions, the surface of said second regions

contacting material with low thermally conductivity. For the benefit of manufacturing a laser medium on the heatsink, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Pillai for the laser medium which is partly supported in at least two first regions contacting thermally conducting material (heatsink), and with at least two second regions adjacent to said first regions, the surface of said second regions contacting material with low thermally conductivity as taught by Beach.

Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pillai (US6212216) in view of Beach et al. (US6347109) and further in view of the Prior art. Pillai and Beach disclose all limitations of the claims except for the thermally conducting glue (contacting medium). Prior art teaches the thermally conducting glue (contacting medium) (p.10, l.14-15). For the benefit of bonding the laser medium to the heatsink, it would have been obvious to one having ordinary skill in the art at the time the invention was made to Pillai and Beach the glue as taught by Prior art.

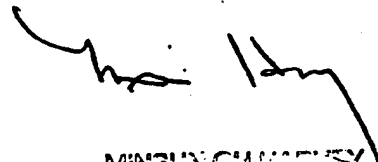
### Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

Michael Dung Nguyen



MINGUN DUNG NGUYEN  
PRIMARY